

CLAIMS

What is claimed is:

1. A method of operating a network facsimile, the network facsimile performing both a function of transmitting and/or receiving an electronic mail to and/or from a mail server and a facsimile function, the method comprising:

storing the received facsimile data until an amount of received facsimile data is more than a predetermined amount if the facsimile data is received from an outside source when there is no printing paper on which the facsimile data is to be printed;

converting the stored facsimile data into a form of an electronic mail and transmitting the converted data to the mail server, if the amount of the received facsimile data is more than the predetermined amount or if the facsimile data is completely received; and

determining whether the facsimile data is completely received, and proceeding to the storing operation if the facsimile data is not completely received.

2. The method of claim 1, wherein the storing of storing the received facsimile data comprises:

determining whether there is the printing paper;

determining whether the facsimile data is received if it is determined that there is no printing paper, and proceeding to the determining operation whether there is the printing paper if the facsimile data is not received; and

storing the received facsimile data until the amount of the received facsimile data is more than the predetermined amount if the facsimile data is determined to be received.

3. The method of claim 2, wherein the operation of storing the received facsimile data comprises:

storing the received facsimile data if the facsimile data is received;

determining whether the facsimile data is an end of a page to be printed or whether the facsimile data is completely received, and proceeding to the operation of storing the received facsimile data if the facsimile data is not the end of the page and the facsimile data is not completely received;

determining whether the amount of the stored facsimile data is less than the predetermined amount and proceeding to the operation of converting the stored facsimile data if the amount of the stored facsimile data is more than the predetermined amount if it is

determined that the facsimile data is the end of the page or if the facsimile data is completely received; and

determining whether the facsimile data is completely received if the amount of the stored facsimile data is less than the predetermined amount, proceeding to the operation of storing the received facsimile data if the facsimile data is not completely received, and proceeding to the operation of converting the stored facsimile data if the facsimile data is completely received.

4. The method of claim 3, wherein the operation of storing the received facsimile data further comprises,

converting a format of the stored facsimile data and proceeding to the operation of determining whether the amount of the stored facsimile data is less than the predetermined amount, if the facsimile data is the end of the page or the facsimile data is completely received, and

the operation of determining whether the amount of the stored facsimile data is less than the predetermined amount comprises determining whether an amount of the converted format of facsimile data is less than the predetermined amount, proceeding to the operation of converting the stored facsimile data if the amount of the converted format of facsimile data is more than the predetermined amount, and proceeding to the operation of determining that the facsimile data is completely received if the amount of the converted format of facsimile data is less than the predetermined amount.

5. The method of claim 3, wherein the operation of storing the received facsimile data further comprises:

converting a format of the stored facsimile data and proceeding to the operation of converting the received facsimile data, if the amount of the stored facsimile data is less than the predetermined amount or if the facsimile data is completely received.

6. The method of claim 3, wherein the operation of storing the received facsimile data further comprises:

setting a page number of the facsimile data and proceeding to the operation of storing the received facsimile data if the facsimile data is received; and

increasing the page number by one and proceeding to the operation of storing the received facsimile data if the facsimile data is not completely received,

wherein in the operation of converting the stored facsimile data, the converting of the stored facsimile data into the form of the electronic mail comprises converting the facsimile data into the form of the electronic mail according to the page number.

7. The method of claim 2, wherein the operation of storing the received facsimile data comprises:

converting a format of the received facsimile data if the facsimile data is received;

storing the converted format of facsimile data;

determining whether the received facsimile data is the end of the page to be printed or the facsimile data is completely received and proceeding to the operation of converting the format of the received facsimile data if the received facsimile data is not the end of the page and the facsimile data is not completely received;

determining whether the amount of the stored facsimile data with the converted format is less than the predetermined amount if the received facsimile data is the end of the page or the facsimile data is completely received, and proceeding to operation of converting the stored facsimile data if the amount of the stored facsimile data is more than the predetermined amount; and

determining whether the facsimile data is completely received if the amount of the stored facsimile data with the converted format is less than the predetermined amount, proceeding to the operation of converting the format of the received facsimile data if the facsimile data is not completely received, and proceeding to the operation of converting the stored facsimile data if the facsimile data is completely received.

8. The method of claim 7, wherein the operation of storing the received facsimile data further comprises:

setting a page number of the facsimile data and proceeding to operation of converting the format of the received facsimile data if the facsimile data is received; and

increasing the page number by one and proceeding to the operation of converting the format of the received facsimile data if the facsimile data is not completely received,

wherein in the operation of converting the storing facsimile data, the converting of the stored facsimile data into the form of the electronic mail comprises converting of the stored facsimile data into the form of the electronic mail according to the page number.

9. The method of claim 1, wherein the operation of converting the stored facsimile data into the form of the electronic mail comprises:

converting the stored facsimile data into the form of the electronic mail if the amount of the received facsimile data is more than the predetermined amount or the facsimile data is completely received; and

transmitting the facsimile data as the form of the electronic mail to the mail server, and proceeding to the operation of determining whether the facsimile data is completely received.

10. The method of claim 9, wherein in the operation of converting the stored facsimile data, the electronic mail comprises an identification factor to identify the facsimile data.

11. The method of claim 10, wherein the electronic mail comprises a standard or a non-standard header which includes the identification factor.

12. The method of claim 10, wherein the electronic mail comprises a title which includes the identification factor.

13. The method of claim 10, the method further comprising:
determining whether printing paper is newly supplied after there is no printing paper;
determining whether the electronic mail transmitted to the mail server when there is no printing paper exists, if the printing paper is newly supplied after there is no printing paper; and
receiving and displaying the electronic mail from the mail server, if the electronic mail transmitted to the mail server exists.

14. The method of claim 13, wherein the operation of receiving and displaying the electronic mail comprises:

accessing the mail server if the electronic mail transmitted to the mail server exists;
receiving a header from the accessed mail server;
extracting the identification factor from the header; and
perceiving the electronic mail belonging to the same facsimile document among the electronic mails divided and transmitted to the mail server and receiving the perceived electronic mail from the mail server, using the extracted identification factor, and showing the received electronic mail to the user.

15. The method of claim 1, further comprising:
determining whether a new printing paper is supplied after it is determined that there is no the printing paper;
determining whether the electronic mail transmitted to the mail server exists when it is determined that there is no printing paper, if the new printing paper is supplied after it is determined that there is no printing paper; and
receiving and displaying the electronic mail from the mail server if the electronic mail transmitted to the mail server exists.

16. The method of claim 15, wherein the operation of storing the received facsimile data comprises setting a state indicating that there is no printing paper when it is determined that there is no printing paper, performing the operation of determining that the new printing paper is supplied when there is printing paper and determines whether the state is set, and the method further comprises releasing the state if the state is set, and proceeding to the operation of determining that the electronic mail transmitted to the mail server exists.

17. The method of claim 15, wherein the operation of determining whether the electronic mail transmitted to the mail server exists further comprises searching for the mail server and determining whether the electronic mail transmitted to the mail server exists when there is no printing paper.

18. The method of claim 9, further comprising:
determining whether a new printing paper is supplied after it is determined that there is no printing paper;
determining whether the electronic mail transmitted to the mail server exists when it is determined that there is no printing paper, if the new printing paper is supplied after it is determined that there is no printing paper; and
receiving and displaying the electronic mail from the mail server if the electronic mail transmitted to the mail server exists.

19. The method of claim 18, wherein the operation of converting the stored facsimile data into the format the electronic mail further comprises setting a variable indicating that the facsimile data is transmitted as the form of the electronic mail to the mail server, and proceeding to the operation of determining that the facsimile data is completely received,

wherein in the operation of determining that the electronic mail transmitted to the mail server exists, it is determined whether the variable is set if the new printing paper is supplied after there is no printing paper,

wherein in the operation of receiving and displaying the electronic mail from the mail server, the electronic mail is received from the mail server if the variable is set, and the received electronic mail is provided to the user, and

wherein the method further comprises resetting the variable after the operation of receiving and displaying the electronic mail is performed.

20. A network facsimile performing both a function of transmitting/receiving an electronic mail to/from a mail server and a facsimile function, the network facsimile comprising:

a data receiving processor, which checks whether a printing paper to print facsimile data provided from an outside source exists, whether the facsimile data is received, whether an amount of the received facsimile data is more than a predetermined amount, and whether the facsimile data is completely received, to generate first, second, third and fourth control signals, respectively, receives and stores the facsimile data in response to first, second, third, and fourth control signals, and outputs the stored facsimile data in response to one of the third and fourth control signal; and

a data transmitting processor, which converts the stored facsimile data received from the data receiving processor into a form of the electronic mail and transmits the converted data to the mail server.

21. The network facsimile of claim 20, wherein the data receiving processor comprises:

a paper check unit, which checks whether there is the printing paper, in response to the second control signal and outputs the checked result as the first control signal;

a data receipt check unit, which checks whether the facsimile data is received, in response to the first control signal, and outputs the checked result as the second control signal;

a data management unit, which stores and manages the received facsimile data, in response to the second control signal.

22. The network facsimile of claim 21, wherein the data management unit comprises:

a first page check unit, which checks whether the received facsimile data is an end of a page to be printed and outputs the checked result as fifth control signal;

a first data storage unit, which stores the received facsimile data, in response to one of the second control signal, the fourth control signal, and the fourth and fifth control signals, and reads the stored facsimile data in response to one of the third and fourth control signal;

a first amount comparison unit, which compares an amount of the stored facsimile data received from the first data storage unit with the predetermined amount in response to the fourth and the fifth control signals, and outputs the comparison result as the third control signal; and

a first receiving completion check unit, which checks whether the facsimile data is completely received, in response to one of the third and fifth control signal, and outputs the checked result as the fourth control signal.

23. The network facsimile of claim 22, wherein the data management unit further comprises:

a first format converter, which converts a format of the stored facsimile data in response to one of the fourth and fifth control signals, outputs the converted format of the facsimile data to the first amount comparison unit, and outputs the converted format of the facsimile data to the data transmitting processor in response to the third and fourth control signals,

wherein the first amount comparison unit compares the amount of the converted format of the facsimile data with the predetermined amount.

24. The network facsimile of claim 22, wherein the data management unit further comprises:

a page number generator, which sets a page number of the received facsimile data in response to the second control signal, and increases the page number by one in response to the third and fourth control signals,

wherein the data transmitting processor constructs the form of the electronic mail according to the page number.

25. The network facsimile of claim 21, wherein the data management unit comprises:

a second format converter, which converts a format of the received facsimile data, in response to one of the second control signal, the third and fourth control signals, and the fourth and fifth control signals;

a second data storage unit, which stores the converted format of the facsimile data received from the second format converter, and reads the stored facsimile data in response to one of the third and fourth control signals;

a second page check unit, which checks whether the facsimile data is the end of the page to be printed, and outputs the checked result as the fifth control signal;

a second receiving completion check unit, which checks whether the facsimile data is completely received, in response to one of the third and fifth control signal, and outputs the checked result as the fourth control signal; and

a second amount comparison unit, which compares the amount of the stored facsimile data received from the second data storage unit with the predetermined amount in response to both the fourth and fifth control signals or only the fifth control signal, and outputs the compared result as the third control signal.

26. The network facsimile of claim 20, wherein the data transmitting processor comprises:

an electronic mail generator, which converts the stored facsimile data received from the data receiving processor into the form of the electronic mail; and

a data transmitter, which transmits the facsimile data in the form of the electronic mail received from the electronic mail generator to the mail server.

27. The network facsimile of claim 26, further comprising:

a paper check unit, which supplies printing paper after it is determined that there is no printing paper, and outputs the checked result as a sixth control signal;

a transmission mail check unit, which checks whether the electronic mail transmitted to the mail server when it is determined that there is no printing paper, exists, in response to the sixth control signal, and outputs the checked result as a seventh control signal; and

a mail receiving and displaying unit, which receives and displaying the electronic mail from the mail server in response to the seventh control signal.

28. The network facsimile of claim 27, wherein the data transmitting processor further comprises,

a variable setting unit, which sets a variable indicating that the facsimile data in the form of the electronic mail is transmitted to the mail server, in response to transmission completion of the facsimile data from the data transmitter, resets the variable in response to display completion from the mail receiving and displaying unit, and outputs the variable to the transmission mail check unit,

wherein the transmission mail check unit checks whether the variable is set, and outputs the checked result as the seventh control signal.

29. The network facsimile of claim 26, wherein the electronic mail generator converts the facsimile data into the form of the electronic mail so that the electronic mail includes an identification factor to identify the facsimile data.

30. The network facsimile of claim 29, further comprising:

a paper check unit, which checks whether a new printing paper is supplied after it is determined that there is no printing paper, and outputs the checked result as a sixth control signal;

a transmission mail check unit, which checks whether the electronic mail transmitted to the mail server when it is determined that there is no printing paper, exists, in response to the sixth control signal, and outputs the checked result as a seventh control signal; and

a mail receiving and displaying unit, which receives and displays the electronic mail from the mail server in response to the seventh control signal.

31. The network facsimile of claim 30, wherein the mail receiving and displaying unit comprises:

a header receiver, which accesses the mail server and receives a header from the mail server in response to the seventh control signal;

a factor extraction unit, which extracts the identification factor from the header;

a mail receiver, which identifies the electronic mail belonging to the same facsimile document that has been divided and transmitted to the mail server, using the extracted identification factor, and receives the identified electronic mail from the mail server; and

a display unit, which displays the electronic mail received from the mail receiver.

32. The network facsimile of claim 20, further comprising:

a paper check unit, which checks whether a new printing paper is supplied after it is determined that there is no printing paper and outputs the checked result as a sixth control signal;

a transmission mail check unit, which checks whether the electronic mail transmitted to the mail server when it is determined that there is no printing paper, exists, in response to the sixth control signal, and outputs the checked result as a seventh control signal; and

a mail receiving and displaying unit, which receives and displays the electronic mail from the mail server, in response to the seventh control signal.

33. The network facsimile of claim 32, wherein:

the data receiving processor generates a state signal indicating that there is no printing paper when it is determined that there is no printing paper;

the a paper check unit checks whether the state signal is generated, in response to the first control signal, and outputs the check result as the sixth control signal;

the network facsimile further comprises a state release unit which generates an eighth control signal to stop the generation of the state signal in response to the sixth control signal;

the data receiving processor stops generating the state signal in response to the eighth control signal; and

the transmission mail check unit checks whether the electronic mail transmitted to the mail server when it is determined that there is no printing paper, exists, in response to the eighth control signal.

34. The network facsimile of claim 32, wherein the transmission mail check unit searches for the mail server and generates the seventh control signal in response to the sixth control signal.